Ontario Water Resources Commission.
Divsion of Plant Operations.

ONTARIO MINISTRY OF ENVIRONMENT
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1966 OPERATING SUMMARY

PORT DOVER

water pollution control plant

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1966

Port Dover : water pollution
control plant.
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ONTARIO WATER RESOURCES COMMISSION
OFFICE OF THE GENERAL MANAGER

Members of the Port Dover Local Advisory Committee,
Port Dover, Ontario.

Gentlemen:

We are pleased to submit to you the 1966 Operating Summary for the Port Dover Water Pollution Control Plant, OWRC Project No. 62-S-115.

It is hoped that our joint participation in efforts to combat water pollution will have even more success in the coming year.

Yours very truly,

D. S. Caverly,
General Manager.

ONTARIO WATER RESOURCES COMMISSION
801 BAY STREET
TORONTO 5

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J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER
W. S. MacDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am happy to present you with the 1966 Operating Summary for the Port Dover Water Pollution Control Plant, OWRC Project No. 62-S-115.

The report offers a concise summary of operating data for the year and comparison with previous years where these are applicable and significant.

Yours very truly,

B C Palmer

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

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FOREWORD

● This operating summary contains complete information on the management of the project during 1966. It contains a concise review of the year's plant operation, significant financial details, and a visual presentation in graphs and charts of technical performance.

The information will be of value to interested parties in assessing the adequacy of the project at this time and its ability to meet future requirements.

The report is the result of co-operation by several groups within the Division of Plant Operations. These include the statistics section and the technical publications section. The Division of Finance and the draughting section of the Division of Sanitary Engineering were also closely associated with its publication.

The Regional Operations Engineer, however, has had the primary responsibility for the content, and will be happy to answer any questions regarding it.

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PORT DOVER

water pollution control plant

operated for

THE TOWN OF PORT DOVER

by the

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Assistant Director: C. W. Perry
Regional Supervisor: A. C. Beattie
Operations Engineer: R. S. McKittrick

801 Bay Street Toronto 5

'66 REVIEW

The total operating cost for the year was $23,641.32 representing a cost of $185.12 per million gallons of sewage treated. This high unit cost is expected to decrease as the flows to the plant increase. The connection of major industries in the municipality to the sewer collection system should result in a considerable increase in raw sewage.

The average sewage flow was 0.35 mgd which is approximately 17% of the design capacity. The average raw sewage strengths for BOD and SS were 219 and 187 ppm respectively and the removal efficiencies for BOD and SS were 57.5 and 61.5% respectively.

The plant staff were effective in keeping a clean, attractive and well maintained project during 1966.

PROJECT COSTS

NET CAPITAL COST (Estimated)	$684,427.48
DEDUCT - Portion Financed by CMHC (Estimated)	463,731.87
Long Term Debt to OWRC	$220,695.61

Debt Retirement Balance at Credit (Sinking Fund) December 31, 1966	$ 12,824.96

Net Operating	$ 23,641.32
Debt Retirement	4,449.00
Reserve	4,686.67
Interest Charged	12,263.35
TOTAL	$ 45,040.34

RESERVE ACCOUNT

Balance at January 1, 1966	$ 7,633.33
Deposited by Municipality	4,686.67
Interest Earned	486.44
	$ 12,806.44
Less Expenditures	927.00
Balance at December 31, 1966	$ 11,879.44

MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY
JAN	1324.96	841.92		374.94		15.80	75.00		17.30
FEB	1606.40	1012.40		470.11		51.12		2.03	70.74
MARCH	1454.63	823.35		451.48		48.56		110.23	21.00
APRIL	2832.18	1232.89		506.57	718.48	57.44	207.20	65.33	44.27
MAY	1963.01	847.11		475.13	445.02	73.12		15.04	107.59
JUNE	1541.48	915.58	80.16	414.88	9.71	74.81		3.15	43.19
JULY	1707.12	802.22		400.24	456.75	47.91			
AUG	1646.27	868.50		372.28	313.28	52.86			39.35
SEPT	4662.06	1276.24		399.94	922.02	61.38	28.67	49.35	1924.46
OCT	1347.34	940.05		406.14		139.93		99.14	(237.92)
NOV	1167.84	485.41		412.34		226.12		21.67	22.30
DEC	2388.03	825.98		896.27	313.28	83.04	137.00	57.99	74.47
TOTAL	23641.32	10871.66	80.16	5580.32	3178.54	932.09	447.87	423.93	2126.75

BRACKETS INDICATE CREDIT

YEARLY OPERATING COSTS

YEAR	M.G. TREATED	TOTAL COST	COST PER FAMILY PER YEAR	COST PER MILLION GALLONS	COST PER L.B. OF BOD REMOVED
1965	126.92	$23,343.94	* $28.47	$183.93	9 CENTS
1966	127.706	$23,641.32	$28.90	$185.12	10 CENTS

* BASED ON ANNUAL POPULATION ESTIMATE AND 3.9 PERSONS PER FAMILY

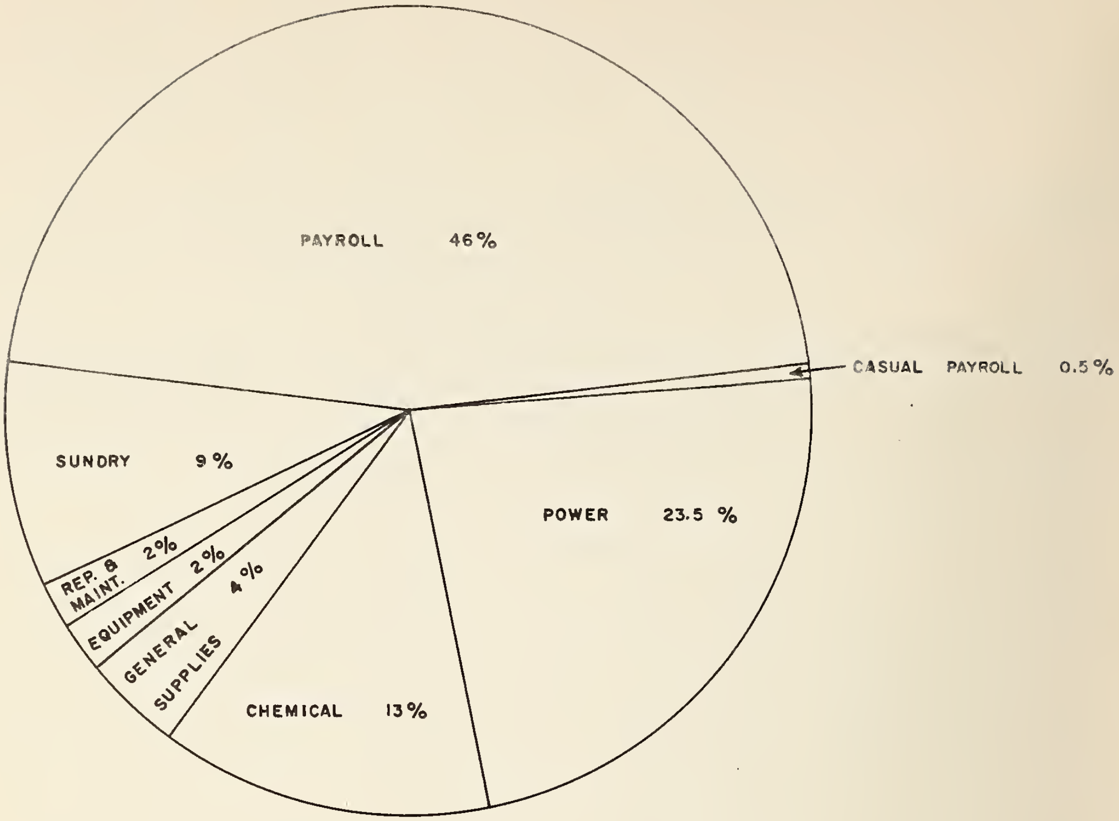
VACUUM FILTER COSTS (MONTHLY)

MONTH	COST PER MONTH					TOTAL	COST PER TON DRY WEIGHT					TOTAL
	$FeCl_3$	LIME	LABOUR	ELEC	MAINT		$FeCl_3$	LIME	LABOUR	ELEC	MAINT	
JANUARY	19.54	7.85	33.18	2.84	14.63	78.04	7.03	2.82	11.94	1.02	5.26	28.07
FEBRUARY	10.86	4.40	22.12	1.92	9.75	49.05	5.76	2.33	11.73	1.02	5.17	26.01
MARCH	49.93	14.95	66.36	7.15	29.26	167.65	7.12	2.13	9.47	1.02	4.17	23.91
APRIL	67.30	27.85	78.10	6.85	34.44	214.54	10.02	4.15	11.63	1.02	5.13	31.95
MAY	130.26	21.85	55.99	5.63	24.69	238.42	23.60	3.96	10.14	1.02	4.47	43.19
JUNE	49.93	23.15	78.10	7.88	34.44	193.50	6.46	3.00	10.11	1.02	4.46	25.05
JULY	36.91	18.78	52.53	5.07	23.17	136.46	7.43	3.78	10.57	1.02	4.66	27.46
AUGUST	34.74	16.18	49.77	6.06	21.95	128.70	5.85	2.72	8.38	1.02	3.70	21.67
SEPTEMBER	78.16	35.85	94.69	11.44	41.76	261.90	6.97	3.19	8.44	1.02	3.72	23.34
OCTOBER	47.76	23.58	55.30	5.87	24.38	156.89	8.30	4.10	9.62	1.02	4.24	27.28
NOVEMBER	56.45	17.92	58.06	5.19	25.60	163.22	11.10	3.52	11.42	1.02	5.03	32.09
DECEMBER	42.08	11.58	47.00	4.49	20.73	125.88	9.56	2.63	10.68	1.02	4.71	28.60
TOTAL	623.92	223.94	691.20	70.39	304.80	1914.25	109.20	38.33	124.13	12.24	54.72	338.62
AVERAGE PER MONTH	51.99	18.66	57.60	5.87	25.40	159.52	9.10	3.19	10.34	1.02	4.56	28.22

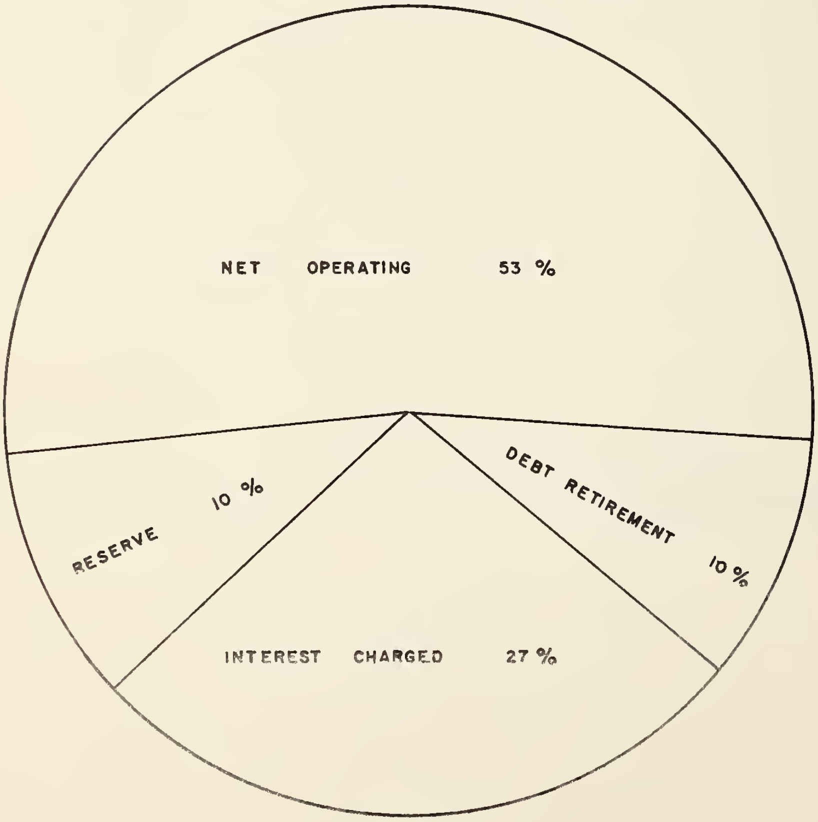
COMMENTS

The cost of filtering raw sludge in 1966 was $28.22 per ton of dry solids. The unit cost of sludge filtration is expected to decrease as the volume of sludge received at the plant increases.

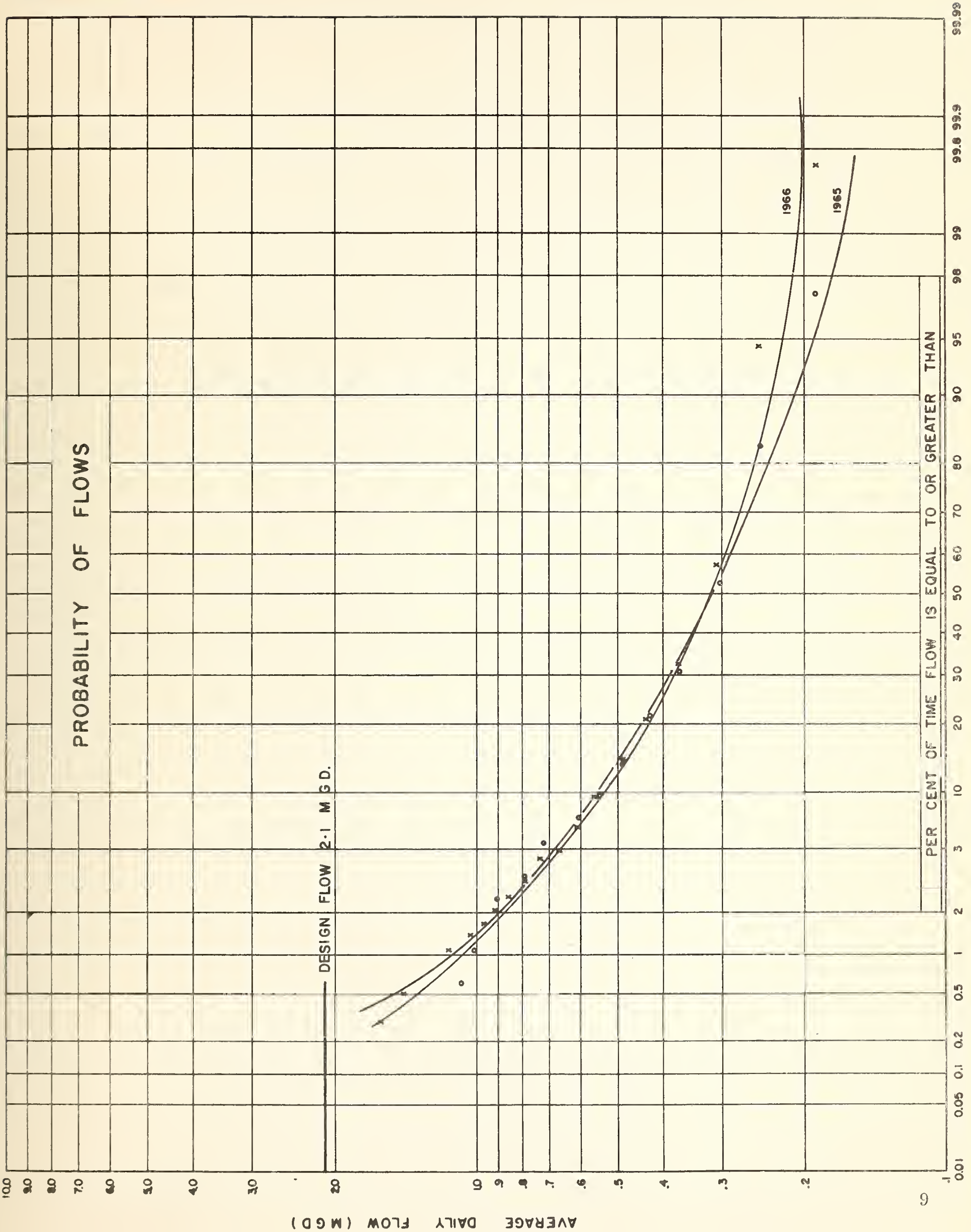
1966 OPERATING COST

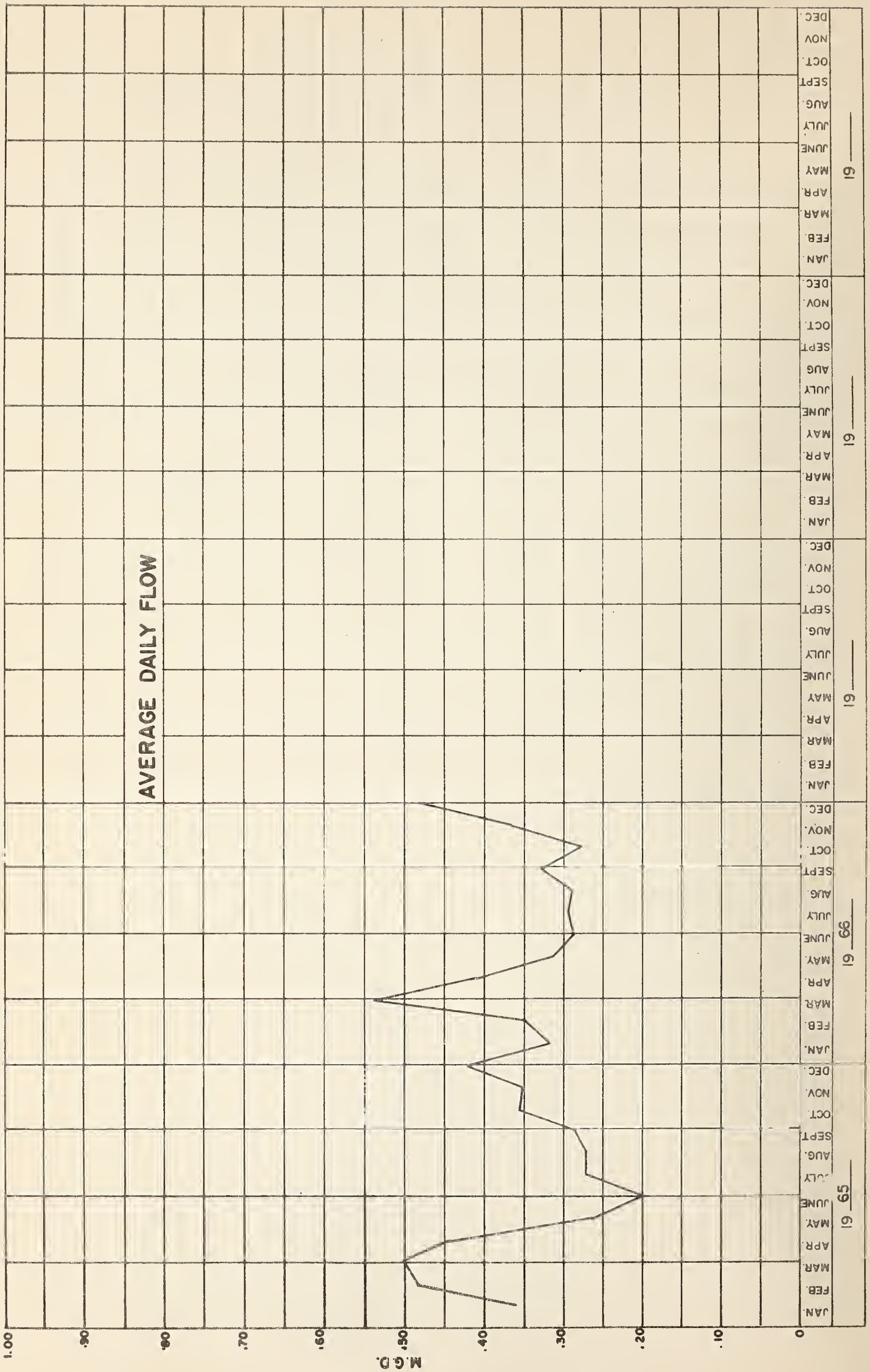


TOTAL ANNUAL COST



Process Data



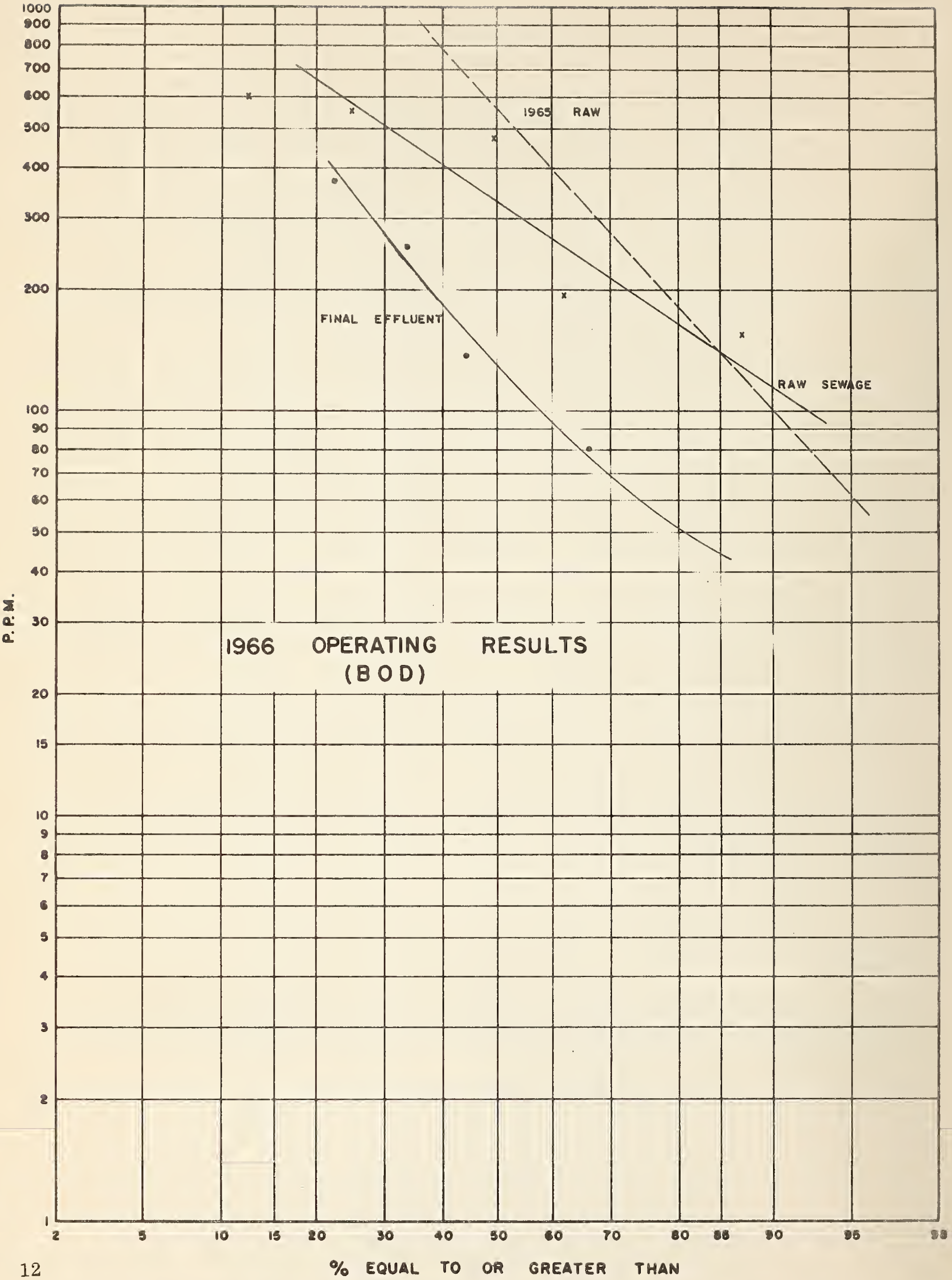

AVERAGE DAILY FLOW
M.G.D.
1.00
.90
.80
.70
.60
.50
.40
.30
.20
.10
0
JAN.
FEB.
MAR.
APR.
MAY.
JUNE
JULY
AUG.
SEPT.
OCT.
NOV.
DEC.
19 65
19 66
19 ___
19 ___
19 ___

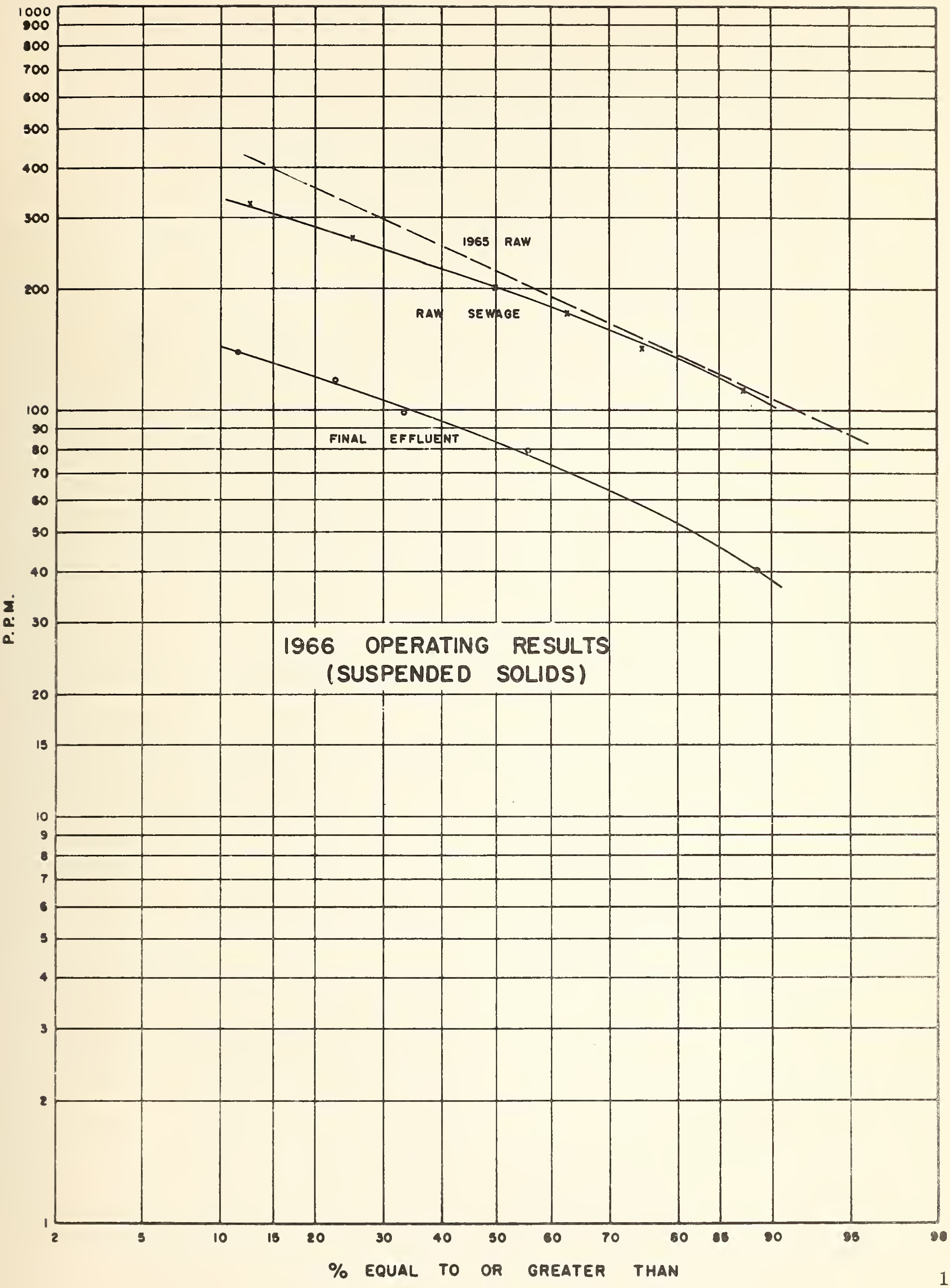
FLOW SUMMARY

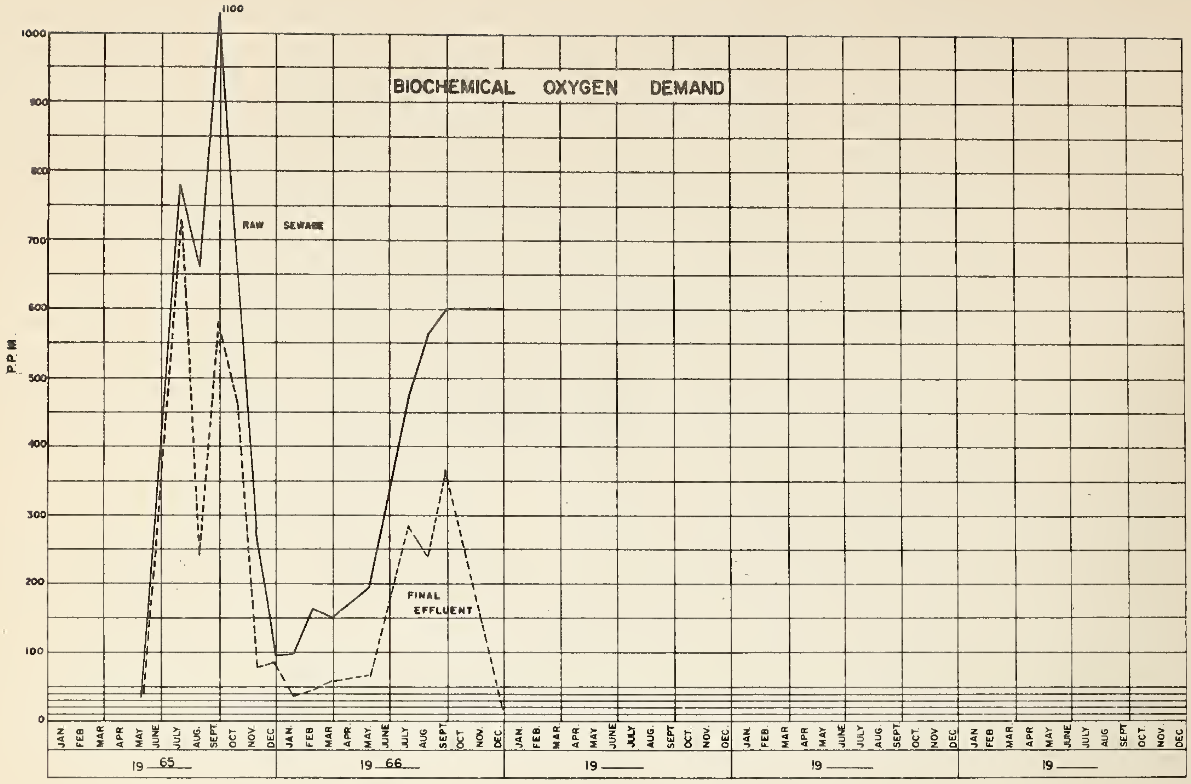
Month	Total Flow	Max. 24 Hour Flow	Max. Instant Flow	Min. 24 Hour Flow	Average Daily MGD
January	9.700	0.520	2.500	0.190	0.313
February	9.590	1.190	2.000	0.170	0.343
March	16.500	1.010	2.000	0.380	0.532
April	12.226	0.770	3.000	0.070	0.408
May	9.610	0.580	1.500	0.230	0.310
June	8.460	0.490	2.000	0.210	0.282
July	8.980	0.450	4.000	0.220	0.290
August	8.940	0.380	2.000	0.220	0.288
September	9.650	0.940	3.000	0.230	0.322
October	8.440	0.470	2.000	0.170	0.272
November	10.890	0.760	2.000	0.240	0.363
December	14.720	1.570	2.500	0.230	0.475
Total	127.706	9.130	28.500	2.560	4.198
Average	10.642	0.761	2.375	0.213	0.350

COMMENTS

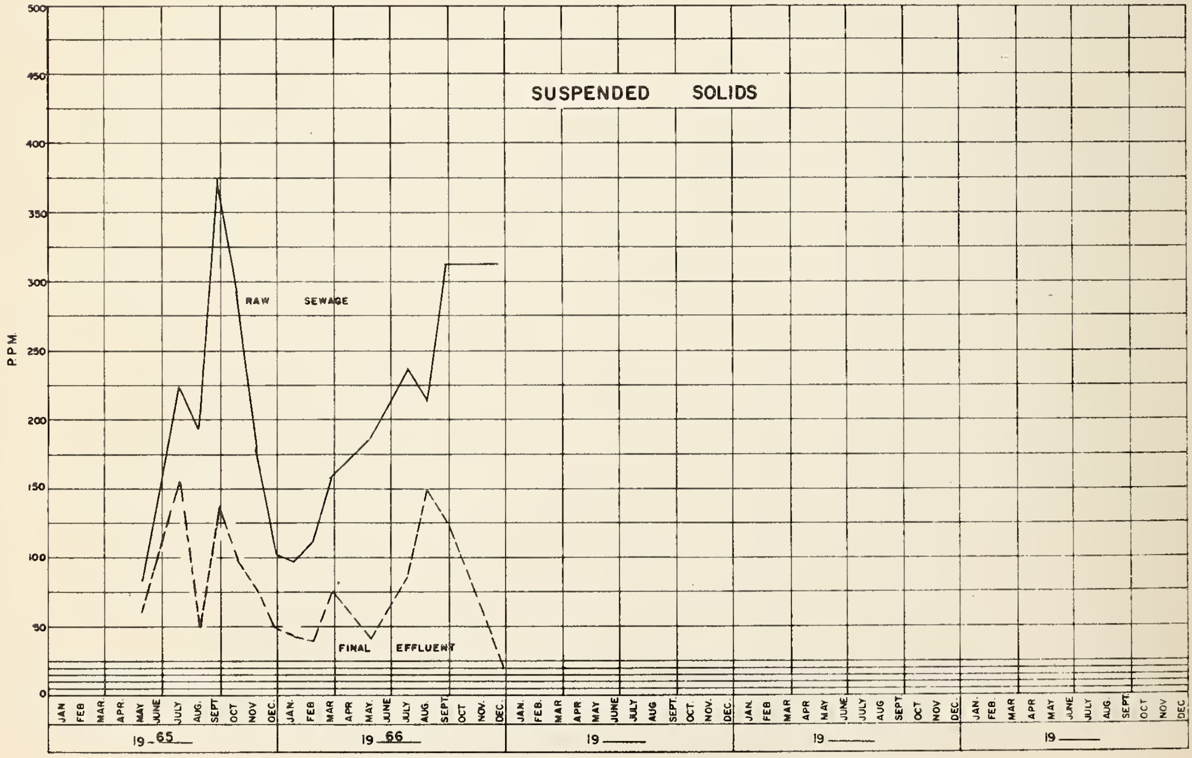
The average daily flow was 0.35 mgd which is approximately 17% of the design capacity. It should be noted that certain industries have not as yet been connected to the municipal sewerage system.


1966 OPERATING RESULTS (BOD)


1966 OPERATING RESULTS
(SUSPENDED SOLIDS)
1965 RAW
RAW SEWAGE
FINAL EFFLUENT
P.P.M.
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
15
10
9
8
7
6
5
4
3
2
1
2
5
10
15
20
30
40
50
60
70
80
85
90
95
98
% EQUAL TO OR GREATER THAN



MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

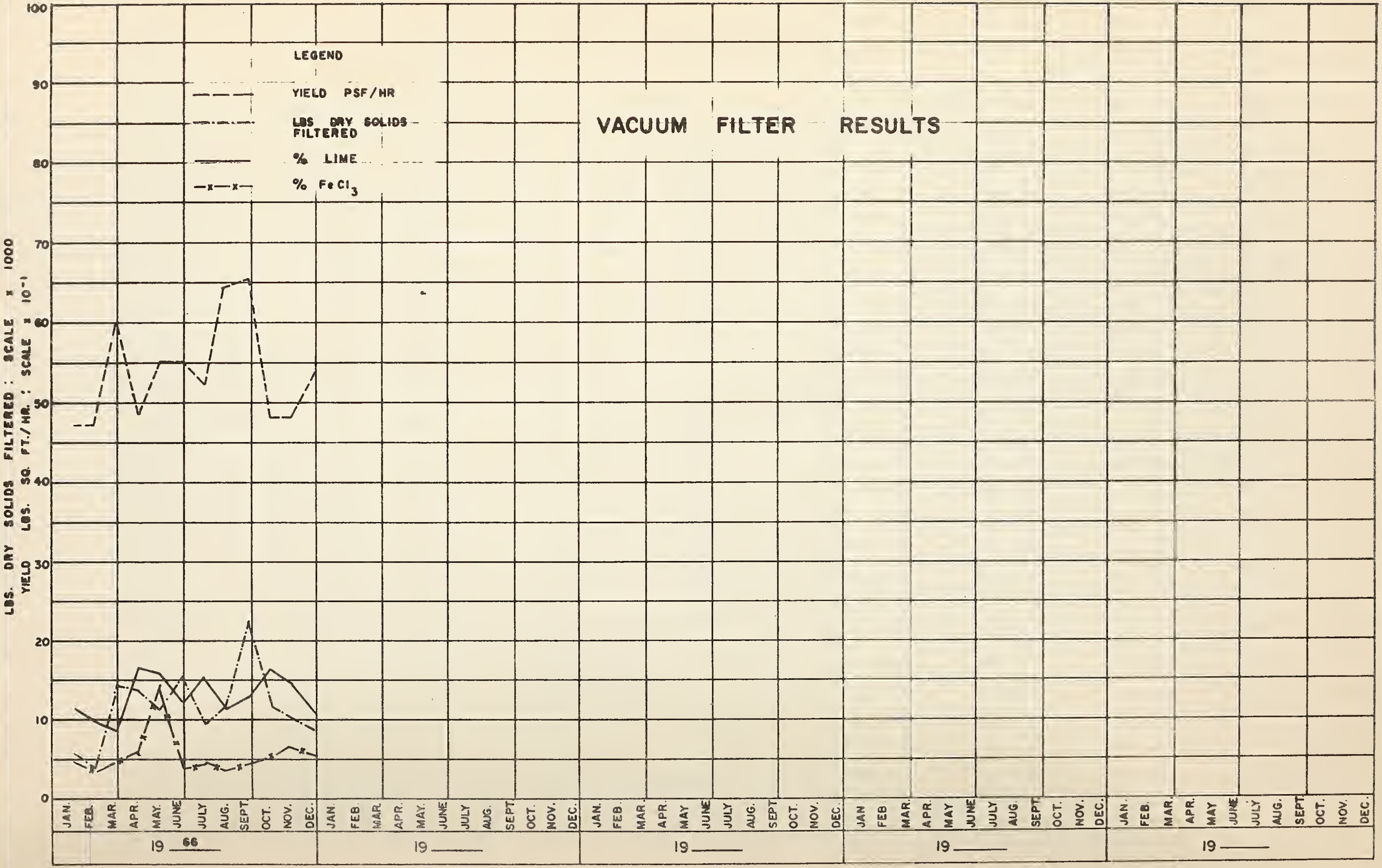
MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT P.P.M.	EFFLUENT P.P.M.	% REDUCTION	TONS REMOVED	INFLUENT P.P.M.	EFFLUENT P.P.M.	% REDUCTION	TONS REMOVED	
JAN.	94	31	67.0	3.0	96	41	57.5	2.7	10
FEB.	160	42	74.0	5.6	110	38	65.5	3.4	49
MAR.	150	57	62.0	7.7	156	74	52.5	6.8	106
APR.	* 319	135	57.5	11.2	* 187	72	61.5	7.0	90
MAY	195	62	68.0	6.4	185	40	78.5	7.0	39
JUNE	* 319	135	57.5	7.8	* 187	72	61.5	4.9	93
JULY	475	282	40.5	8.7	236	85	64.0	6.8	62
AUG.	560	240	57.0	14.3	214	150	30.0	2.9	54
SEPT.	600	360	40.0	11.6	312	126	59.5	9.0	68
OCT.	* 319	135	57.5	7.8	* 187	72	61.5	4.8	39
NOV.	* 319	135	57.5	10.0	* 187	72	61.5	6.3	7
DEC.	* 319	8	97.5	22.9	* 187	19	90.0	12.4	40
TOTAL	-	-	-	117.5	-	-	-	73.4	657
AVG.	319	135	57.5	9.8	187	72	61.5	6.1	55

* NO SAMPLE TAKEN, AVERAGE VALUE SUBSTITUTED

COMMENTS

The average influent BOD and SS was 319 and 187 ppm respectively while the average effluent BOD and SS was 57.5 and 72 ppm respectively. The removal efficiency for BOD and SS was 57.5 and 61.5% respectively which is normal for a primary treatment plant.

The grit removed was approximately 5.2 cubic feet per million gallons which is normal for sanitary sewage.



VACUUM FILTER RESULTS

VACUUM FILTER OPERATION

MONTH	FILTER HOURS		% SOLIDS DIGEST SLUDGE	LBS. DRY SOLIDS FILTERED	* LBS. LIME	% LIME	* LBS. $FeCl_3$	% $FeCl_3$	% SOLIDS FILTERED SLUDGE	YIELD PSF/HOUR
	#1	#2								
JAN.	6.0	-	5.10	5559	628	11.3	234	4.2	19.0	4.70
FEB.	4.0	-	5.70	3773	351	9.3	130	3.5	17.0	4.70
MAR.	12.0	-	6.00	14019	1197	8.5	598	4.3	16.0	6.00
APR.	14.0	-	5.35	13435	2227	16.6	806	6.0	20.5	4.80
MAY.	10.0	-	5.25	11038	1749	15.8	1560	14.1	12.5	5.50
JUNE	14.0	-	5.70	15450	1853	12.0	598	3.9	27.0	5.50
JULY	9.5	-	5.30	9937	1502	15.1	442	4.4	30.0	5.20
AUG.	9.0	-	5.75	11881	1294	10.9	416	3.5	21.0	6.50
SEPT.	17.0	-	7.10	22431	2869	12.8	936	4.2	28.0	6.56
OCT.	10.0	-	5.85	11502	1886	16.4	572	5.0	21.0	4.80
NOV.	10.5	-	6.20	10170	1434	14.1	676	6.6	28.0	4.80
DEC.	8.5	-	6.15	8801	926	10.5	504	5.7	28.0	5.30
TOTAL	124.5	-	-	137996	17916	-	7472	-	-	-
AVG.	10.4	-	5.79	11500	1493	13.0	623	5.4	22.3	5.36

* Lime is expressed as 100% CaO

COMMENTS

The yield of 5.36 pounds of dry sludge per square foot per hour is considered to be above average.

The chemical requirements of the sludge, lime at 13% and ferric chloride at 5.4% are higher than normal, but the wastes received at the plant are unusual in nature. Experiments are being conducted in an attempt to reduce the chemical dosage.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (P.P.M)
JANUARY	9.700	-	-
FEBRUARY	9.590	-	-
MARCH	16.500	-	-
APRIL	12.226	* 1251	11.79
MAY	9.610	1013	10.54
JUNE	8.460	** 406	9.40
JULY	8.980	*** 770	16.59
AUGUST	8.940	1937	21.67
SEPTEMBER	9.650	1865	19.33
OCTOBER	8.440	1141	13.52
NOVEMBER	10.890	-	-
DECEMBER	14.720	-	-
TOTAL	127.706	8383	-
AVERAGE	10.642	1198	14.91

* 26 days' chlorination
** 15 days' chlorination } chlorinator o/s 30 days
*** 16 days' chlorination }

COMMENTS

Disinfection of the final effluent by the use of chlorine is practiced during the spring and summer months in order to avoid any danger to public health. A combined chlorine residual of 0.5 ppm after a 15 minute contact period is maintained.

RECOMMENDATIONS

On the basis of present sewage strengths, consideration should be given to the extension of plant facilities to include secondary treatment.

Date Loaned

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